

CLAIMS

1. A self-aligning roller bearing comprising:
 - an inner ring having a double-row raceway;
 - 5 an outer ring having a double-row integral and spherical raceway;
 - a plurality of rollers incorporated between the inner ring raceway and the outer ring raceway on a double-row basis; and
- 10 a retainer for rotatably retaining the rollers, wherein:
 - processing marks crossing each other are formed on a raceway surface of the spherical raceway of the outer ring;
- 15 the processing marks are cut substantially straightly at a predetermined crossing angle to the circumferential direction of the raceway surface; and
- 20 the surface roughness of the raceway surface is substantially constant in the axial direction and the circumferential direction thereof at least in a part in contact with the roller.

2. The self-aligning roller bearing according to Claim 1, wherein

25 the processing marks are cut at a crossing angle

in the range from 90° to 150° to the circumferential direction of the raceway surface.

3. The self-aligning roller bearing according to Claim 5 1, wherein

the surface roughness of the raceway surface of the outer ring is in the range from 0.15 to 0.4 μmRa in terms of average roughness at the centerline thereof in both of the radial direction and the circumferential 10 direction,

a difference in surface roughness between measurements in the axial direction and the circumferential direction is 0.1 μmRa or less,

skewness (R_{sk}) is -0.4 or less, and

15 the roughness of a raceway surface of the inner ring is 0.1 μmRa or less in terms of average roughness at the centerline in the axial direction thereof.

4. A method of processing a self-aligning roller 20 bearing, comprising the step of:

forming processing marks crossing each other on a raceway surface of an outer ring of the self-aligning roller bearing using a super-finishing process.

5. The method of processing a self-aligning roller bearing according to Claim 4, wherein

the processing marks crossing each other are cut at a crossing angle in the range from 90° to 150° to the 5 circumferential direction of the raceway surface.

6. The method of processing a self-aligning roller bearing according to Claim 4, wherein

the step of forming processing marks includes the 10 steps of:

rotating the outer ring about a center axis thereof, inserting a grindstone in the outer ring, and swinging the grindstone along the curvature of the raceway surface, while pressing the raceway surface with 15 the same.